



Front Range Collaborative Forest Restoration Project Social and Economic Monitoring Plan for Calendar Year 2012

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The social and economic monitoring of the Front Range Collaborative Forest Restoration Project (FR-CFLRP) for calendar year 2012 will follow the methods used for the CY2011 monitoring with a few minor adjustments. We will analyze the economic impacts, levels of wood utilization, and social perceptions. Levels of collaboration will not be measured for CY2012.

Economic Impacts

Key questions to be examined:

1. How many direct jobs are supported per year and over the 10-year life of the CFLRP?
2. How many induced/indirect jobs are supported per year and over the 10-year life of the CFLRP?
3. What proportion of the direct and indirect jobs supported by task orders is located within project area counties vs. outside of the project area?
4. What are the total estimated economic impacts to counties within the project area?

Methods

The “Front Range Model” developed for the CY2011 economic impact analysis will be used to analyze information for CY2012 (outlined in the detailed methods section below). We will collect information from the contractor(s) to calculate *the economic impacts of the CFLR-related task orders*. This model will:

1. Estimate the economic impacts of the task orders within the project area
2. Estimate the employment (number of full and part-time jobs)
3. Identify the home location of contractor employees and sub-contractors

There has been strong interest from the FR Roundtable members to identify *additional economic impacts of the FR-CFLRP projects* outside of the task orders. This is a complicated job due in part to changing forest and regional budgets and funding codes. It was determined we will measure the monitoring funding associated with the FR-CFLRP because: (1) this is an identifiable category of expenses and (2) this is funding that would not have been spent without the CFLRP (i.e. there would not have been post-treatment monitoring or social-economic monitoring, or detailed common stand exams). These additional impacts will be measured by:

1. Estimating the economic impacts from the funding provided to the Colorado Forest Restoration Institute and the Rocky Mountain Research Station for monitoring (i.e. full and part-time employment, impact on local economy).
2. Identifying how much additional funding the PSI and AR NFs are spending on common stand exams. This information would be obtained from the district offices. The PSI NF is using contracts for their common stand exams, the ARNF is using in-house crews.

In addition, we will include a narrative on how the *three types of CFLRP-related funds are being used*, as this would be more effective than attempting to model these numbers. These overall totals are reported in the annual report. For the project-level monitoring we will include more detail on these efforts and how they correspond with the CFLR project. The three types of CFLRP-related funds are:

1. *CFLR funds*, used for treatments and monitoring;
2. *Leveraged funds*, which are not on NFS land but consist of similar restoration efforts on nearby or adjacent land (e.g The Nature Conservancy grant, CO Springs Utilities work, CO State Forest Service work on private lands); and
3. *Matching funds*, or money used for work being done on NFS lands (from within the USFS or external partners such as Denver Water).

We will develop a narrative of the use of these funds by meeting with project representatives (Hal Gibbs and Jeff Underhill) to review USFS information and how these funds were utilized.

Wood Utilization

Key questions to be examined:

1. What wood products and biomass utilization is being generated from CFLR task orders?
2. Where is the utilization occurring?

Methods

The methods developed for the CY2011 wood utilization analysis will be used to analyze information for CY2012. We will continue to collect information from the contractor(s) using the same format, with the addition of asking for CCF numbers on the materials sold rather than the green tons. The CCF numbers associated with the 2012 task orders will also be requested from the National Forests to determine the economic impact of wood utilization associated with the FR-CFLRP. This analysis will:

1. Identify the number of acres and the type of treatment used (manual or mechanical)
2. Identify the amount and types of raw materials being sold
3. Determine where the utilization is occurring
4. Measure the amount and types of wood products and biomass utilization being generated
5. Measure the economic impact of local wood utilization (using the Front Range Model)

Social Perceptions

Key questions to be examined:

1. Does the CFLR project change the level of public understanding and acceptance of forest restoration needs along the Front Range?
2. How should managers discern between, and communicate with, different segments of the “public” that may be at different levels of understanding of the CFLR program, or different levels of being affected by CFLR projects?

Methods

The literature review conducted for the CY2011 monitoring clarified the importance of public outreach and communication associated with forest management efforts. Because funding for outreach and education is limited, the Front Range Roundtable agreed an important next step is to identify what approaches have been most effective for communicating with the Front Range communities. This will be accomplished through:

1. Personal communications and 2-3 organized focus groups with outreach coordinators and public affairs officers from organizations throughout the state (CSFS, Extension, NRCS, local government, etc.)
2. Review of recent social science research from the Front Range Region
 - a. Patty Champ’s (USFS Rocky Mountain Research Station) pre- and post-fire research from Boulder and Larimer Counties
 - b. Stuart Cottrell and Mike Czaja’s research on perceptions toward restoration and mountain pine beetle
3. A review of additional social science literature from the region and the US overall
4. Invite Sarah McCaffrey (USFS Northern Research Station) to present her research on social perceptions to the Front Range Roundtable

There is also a need to identify the role the Front Range Roundtable can take to increase the visibility of the CFLR project and forest restoration efforts overall. The information on public outreach from the CY2011 monitoring will outline mechanisms for the Front Range Roundtable to accomplish this.

Collaboration

Measurement of collaboration levels associated with the FR-CFLRP will not be measured for CY2012. Collaboration will be measured again in years 5 (or 7) and 15. It is anticipated the same methods for the collaboration monitoring used for FY2011 will be used for future monitoring. This will entail interviews with a diverse representation of Front Range Roundtable members.

Key questions to be examined (over the span of the project):

- 1) Over the 10-year CFLR period, are a diverse range of interests and organizations committed to the collaborative process?
- 2) Is the Front Range Roundtable process viewed by participants as sufficiently transparent and fair, and fosters timely communication, group learning, and conflict management?
- 3) Is the Front Range Roundtable process viewed by external parties as legitimate?

Detailed Economic Impact Monitoring Methods (from CY2011 Monitoring Report)

This analysis estimated the economic effects resulting from the implementation of CFRLP funded vegetation restoration treatments on the Pike-San Isabel, and the Arapaho-Roosevelt National Forests in 2011. The economic contributions to the regional economy in terms of employment, labor income and value added are estimated with an Input-Output model using primary data provided by the contractor. The following paragraphs briefly describe the estimation methodology and results.

Economic effects of the FR-CFLRP were analyzed in terms of employment, labor income and value-added resulting from vegetation restoration treatment activities on National Forest system lands. It was therefore important to model these effects from the amount of expenditures and labor actually required to carry out the task orders¹ during the 2011 calendar year, instead of relying on the amount of funding distributed². Pertinent operational expenditure and labor information was collected from the contractor to appropriately model the economic contributions using an Input-Output model. The contractor was provided with a list of questions, which were reviewed with the team and the contractor before and after providing expenditure and labor information (See Appendix D). These reviews helped the contractor better understand what information the team was requesting and how the results would be used, as well as helping the team understand how the contractor interpreted the questions and reported the information. Since the FR-CFLRP only utilized a single contractor to carry out vegetation treatment task orders, the results in this report have been aggregated to not disclose any detailed or sensitive information collected during the modeling process. Rather than assuming all expenditures for a project are incurred in the same location, the pertinent information collected to model inputs included the location (county) where task orders are performed, where operational expenses are incurred, and where labor hours and costs required for each task orders as well as non-labor expenses such as equipment and fuel are incurred.

The Input-Output Model

This analysis used Input-Output (I-O) modeling in order to estimate the economic effects of restoration activities. The U.S. Forest Service routinely uses I-O models to estimate local economic contributions of agency activities as part of the social and economic impact assessment in the environmental impact assessment required by NEPA. The I-O model used in this analysis is built using IMPLAN® software and

¹ “A ‘Task order contract’ means a contract for services that does not procure or specify a firm quantity of services (other than a minimum or maximum quantity) and that provides for the issuance of orders for the performance of tasks during the period of the contract.” (U.S. Federal Acquisition Regulation (FAR), <https://www.acquisition.gov/far/>).

² Unlike the Colorado Front Range FY2011 report compiled by the National CFLRP team (available at: <http://www.fs.fed.us/restoration/CFLRP/results.shtml#annualreports>), which estimates the economic impact based upon the funding distributed, our analysis focused on detailed expenditure and operational data obtained from the contractor. Our analysis therefore focuses on just one component of the distribution of FR-CFLR funding. The calendar year was used because this is the method used by the contractors we obtained information from.

its 2010 county-level data. IMPLAN® (IMpact analysis for PLANing, Minnesota IMPLAN Group, Inc.) is a regional economic impact analysis system. It is capable of determining the extent to which a given activity such as logging, contribute to the local economy in terms of jobs, income, output and value-added. The model accomplishes this by tracing interactions among different sectors within the local economy and calculates the economic effects resulting from a direct impact on the economy. In this analysis, the direct impacts refer to both labor and non-labor operation expenditures incurred by the contractor.

Study Area

The first step in building the I-O model is to select the counties to be included (i.e. the Study Area). The relative size of the economy plays an important role in the estimate of contributions on jobs and income; include too many counties and the results may be washed out, include too few counties and the full impact of the activity may not be accounted for in the model area. The study area for this analysis includes only counties that were identified by the contractor as locations where vegetation treatment task orders/expenditures have occurred. This includes eleven counties in Colorado³:

Adams	Delta	Jefferson	Larimer
Boulder	El Paso	Fremont	Teller
Broomfield	Grand	Jackson	Weld

Calculating economic effects with the IMPLAN model

In order to estimate the economic effects of contractor expenditures, IMPLAN is used to generate “response coefficients” for a range of expenditure categories. Response coefficients, or more intuitively ‘the rates of economic activity’, represent how that activity would ripple through the economy and impact employment and income levels. They are expressed in term of the impacts to jobs, income and value-added per a specified unit of an activity (for example the dollar amounts in final demand). Based on data collected from the contractor, seven categories⁴ of response coefficients are generated⁵:

1. commercial and industrial machinery equipment (including repair and maintenance service),

³ Delta county was also included via a method call MRIO (Multi-Regional Input-Output analysis), which allowed for linkage among non-contiguous counties in the same model.

⁴ The categories correspond to IMPLAN sectors which are based on NAISC (North American Industry Classification System) sectoring.

⁵ Based on information collected from the contractor, additional adjustments have been made by editing the activities in IMPLAN in order to further refine the model. For example, if only a proportion of the expenditure occurred in the study area, the LPP (local purchase percentage) in the IMPLAN model is adjusted accordingly.

2. petroleum refineries,
3. agriculture and forestry support activities (edited Industry Spending Pattern),
4. broadcast and wireless communications equipment manufacturing,
5. retail stores,
6. hand tool, and
7. other crop farming products.

In addition to the industry sector coefficients, four separate groups of response coefficients representing different household income groups were also generated using IMPLAN. These response coefficients are used to track how direct labor income (paychecks received by laborers hired by contractor) can be re-circulated through the household spending patterns causing further local economic activity. The groups are based on the estimated annual salaries for different types of workers in the contractor's firm, including office administration, project manager, forester, mechanic, trucking, manual hand crew, and equipment operator. Direct labor hour requirements for the task orders were also collected from the contractor, and were used to calculate the total direct jobs.

The Front Range Model

It should be noted that the economic impact estimates in this analysis are different than the estimates reported in the FY2011 CFLRP Annual Report (USFS 2012) due to differences in methodologies and data assumptions.

The FY2011 CFLRP Annual report employed an Excel-based tool called 'Treatments for Restoration Economic Analysis Tool' (*TREAT*) for its analysis of all CFLR projects (USFS 2010). The Excel tool *TREAT* relies on existing response coefficients from IMPLAN and therefore is also able to estimate jobs and income. *TREAT* was designed to streamline data entry and preparation for the generation of economic impact tables to be used in the CFLRP proposals. The goal for this tool is to assist teams with estimating the economic impacts of restoration activities while providing a standard approach during the development of CFLR project proposals (USFS 2010).

Since this social-economic analysis aims to serve as part of a monitoring reporting effort, *TREAT* was not used to complete this analysis. Instead, a customized IMPLAN model was built using data inputs from the contractors. This customized IMPLAN model will be referred to as '*The Front Range model*' henceforth. The following section highlights the major dissimilarities between *TREAT* and *The Front Range model*.

IMPLAN model study area: *The Front Range Model* was built using counties where contractor expenditures have occurred, with linkage to the county where office operation expenditures occurred via the Multi-Regional Input-Output (MRIO) modeling technique. *TREAT*, on the other hand, used counties where task orders are proposed to occur (excluding the contractor's home office county).

Model / data year: *The Front Range Model* is based on IMPLAN data from calendar year 2010 (the latest available), using contractor's expenditure information from calendar year 2011 as inputs. All figures adjusted with GDP deflator. *TREAT* is based on IMPLAN data from calendar year 2009, while using the total awarded funding amount from fiscal year 2011 as inputs.

Economic impacts from matching funds and USFS employee salaries: *The Front Range Model* focused exclusively on impacts derived from CFLR funded task orders. *TREAT* on the other hand, included impacts derived from matching funds, as well as induced effects from USFS employee force salary by assuming a fairly substantial Forest Service FTEs allocated to CFLR responsibilities.

Modeling restoration activities: *The Front Range Model* obtained detailed expenditure and operational data from the contractor. These include the dollar amounts spent on various non-labor expenditures such as equipment maintenance or daily use rates, gasoline, office, tools, seeds and other operation costs. For labor, information on salaries and hours worked for different types of workers in the contractor's firm were collected, including office administration, project manager, forester, mechanic, trucking, manual hand crew, and equipment operator. Next, using the above information, analysis-by-parts modeling method was used to estimate impacts from various IMPLAN sectors. The *TREAT* model begins with the total awarded funding amount, and then estimates the impacts to the logging and

supporting forestry sectors, by proportioning a percentage of the award that is going to be used for contracted work by Regional firm(s).

Impacts from Wood utilization: A detailed account on the amount and types of materials removed by task orders, as well as the number and location of businesses purchasing these forest product materials was provided in this report (see the 'Wood Utilization Analysis' section). Since we were unable to obtain data on the volume of timber harvested in terms of CCF/MBF/dry ton for calendar year 2011, we did not use *The Front Range Model* to identify the economic impacts from forest products. Nevertheless, *TREAT* was able to estimate the jobs and income effects from forest products on the regional economy using the anticipated outputs of the 2011 task orders - over six thousand CCF (cubic feet) worth of saw timber.

Conclusion

It is worth noting that both methods utilized IMPLAN at one point during the analytical process and that any multipliers IMPLAN produced are simply projections of impacts from various economic activities based on static models. While a genuine attempt at modeling the impacts from implementation (actual expenditures and labor entering the economy as outlined in this *Front Range Model*) should be taken at the project monitoring stage rather than projecting impacts from the total funds awarded, it is evident that the customized *Front Range Model*, constructed using expenditure data from the contractor, required greater commitments of time and effort. Considering these increased commitments, *TREAT* is by far a more streamlined and easy-to-use tool based out of Excel. *TREAT* is unquestionably the tool of choice when the extra effort of a customized model (such as *The Front Range Model*) proves unwarranted given the time, budget and expertise constraints being faced.

References

USDA Forest Service (USFS). 2010. Treatments for Restoration Economic Analysis Tool: User Guide. *An internal technical guide*. United States Forest Service.

USDA Forest Service (USFS). 2012. Front Range CFLRP Annual Report, FY2011. Available online at: <http://www.fs.fed.us/restoration/CFLRP/> (last accessed October 25, 2012).